

[54] DEVICE FOR PICKING UP OIL FROM WATER AND FROM THE SURFACE OF WATER

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[57] ABSTRACT

Related U.S. Application Data

[63] Continuation of Ser. No. 617,379, Jun. 5, 1984, abandoned.

The invention relates to a device for picking up oil from water and from the surface of water, the device being installed to a water craft and comprising at least one collecting means passing around rolls and being installed obliquely, there being at the upper end of the collecting means devices for removing the oil collected by the collecting means and for directing it into a tank in the water craft. The object is especially to eliminate the disadvantages of previously known devices of the mat type that, when the craft moves, the mat tends to direct water and, along with it, also oil to the sides, past the mat. In accordance with the invention the device comprises a number of parallel loop-like collecting means, each of which is made up of pieces provided with upwards and sideways extending bristles and fixed to the chain, the sideways-directed bristles extending sufficiently far to come into contact with each other, but allowing water to flow without hindrance through the device.

[30] Foreign Application Priority Data

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[52] U.S. Cl. 210/242.3; 198/643;
210/242.1; 210/242.2; 210/776; 210/923;
210/924

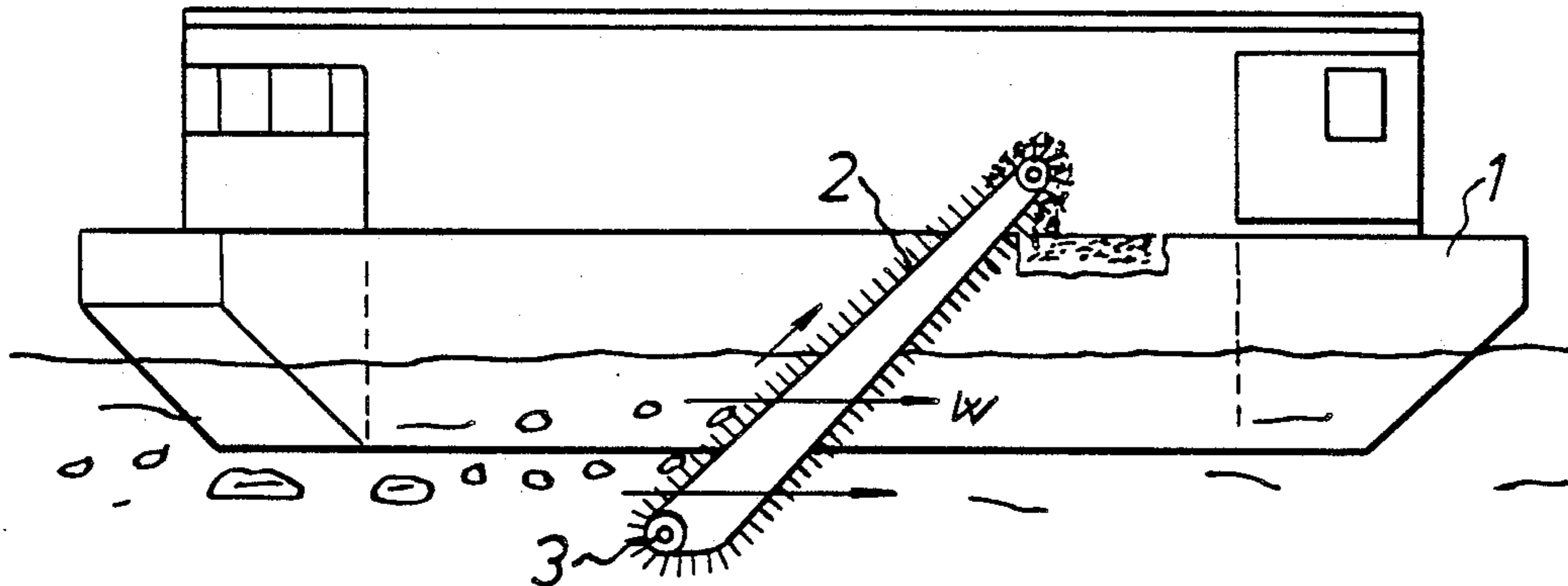
[58] Field of Search 210/923, 924, 242.3,
210/242.1, 242.2, 776; 15/51; 198/643

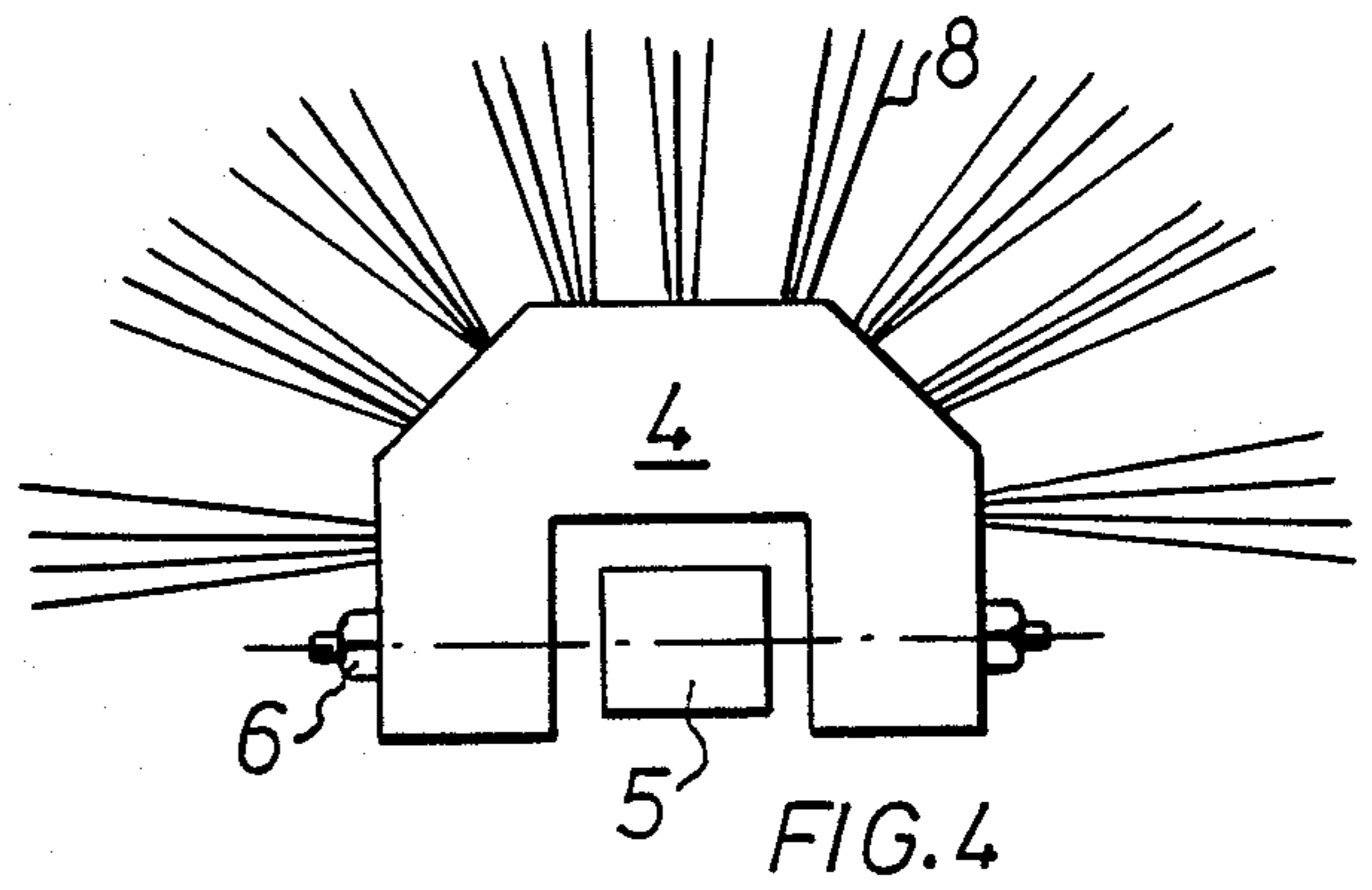
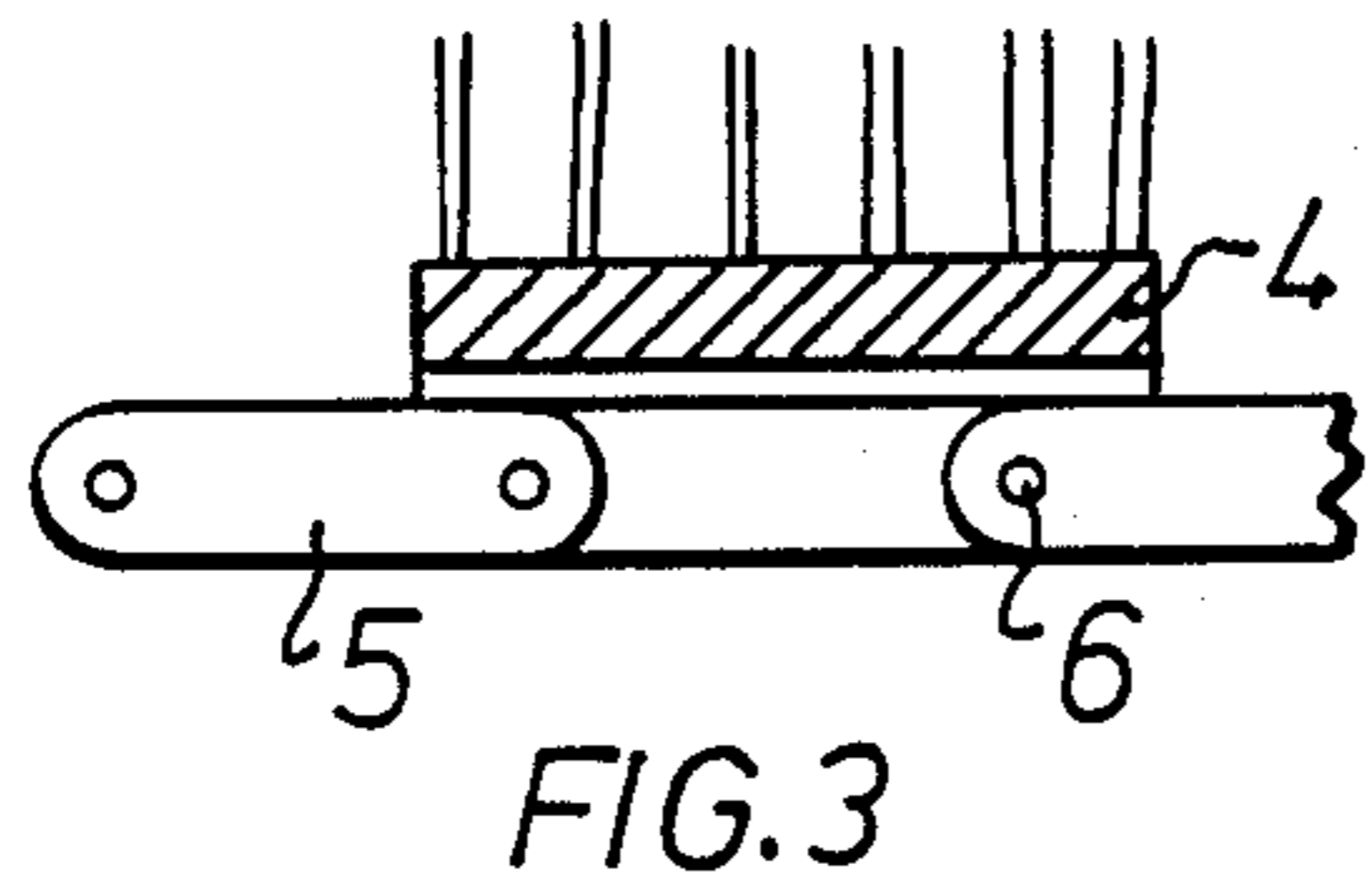
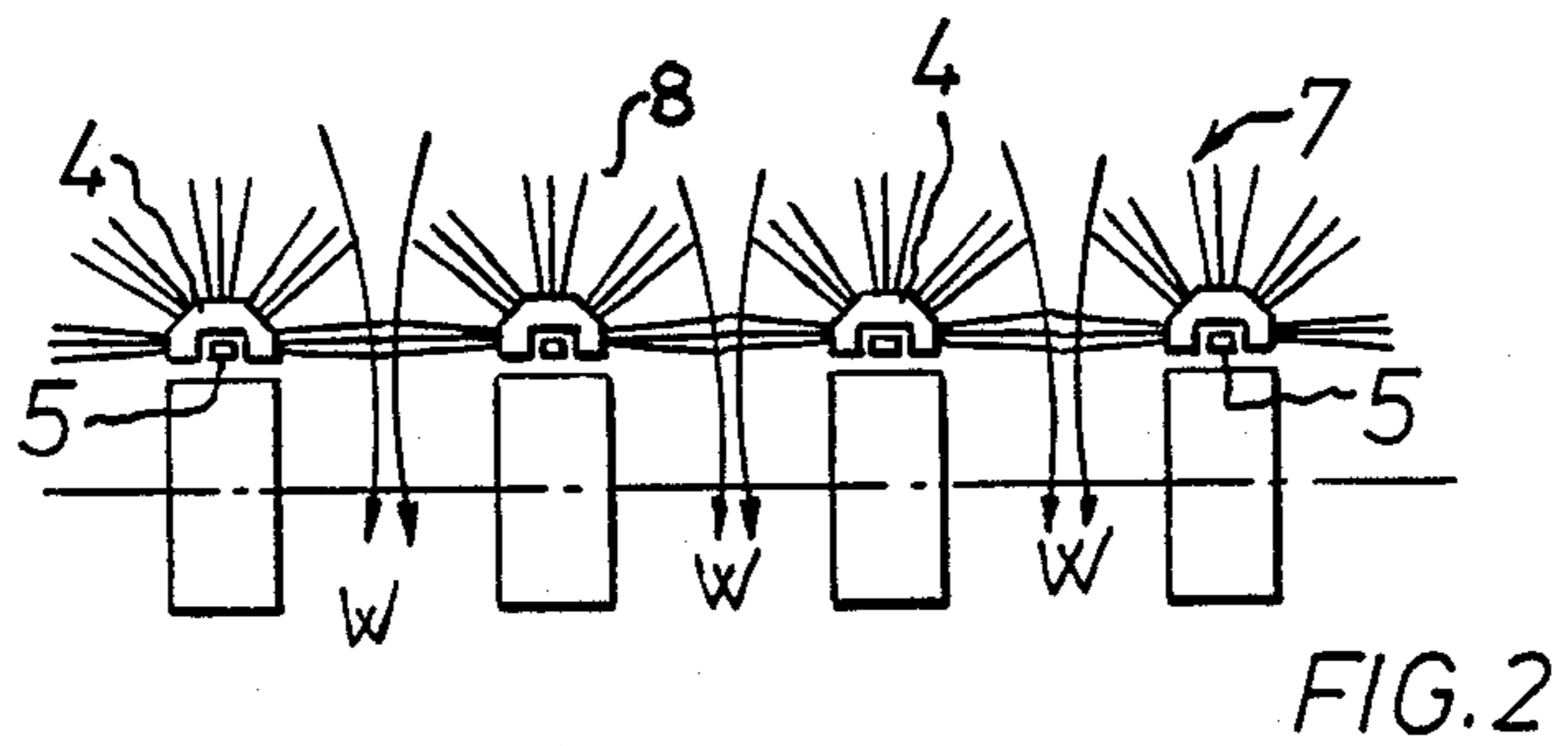
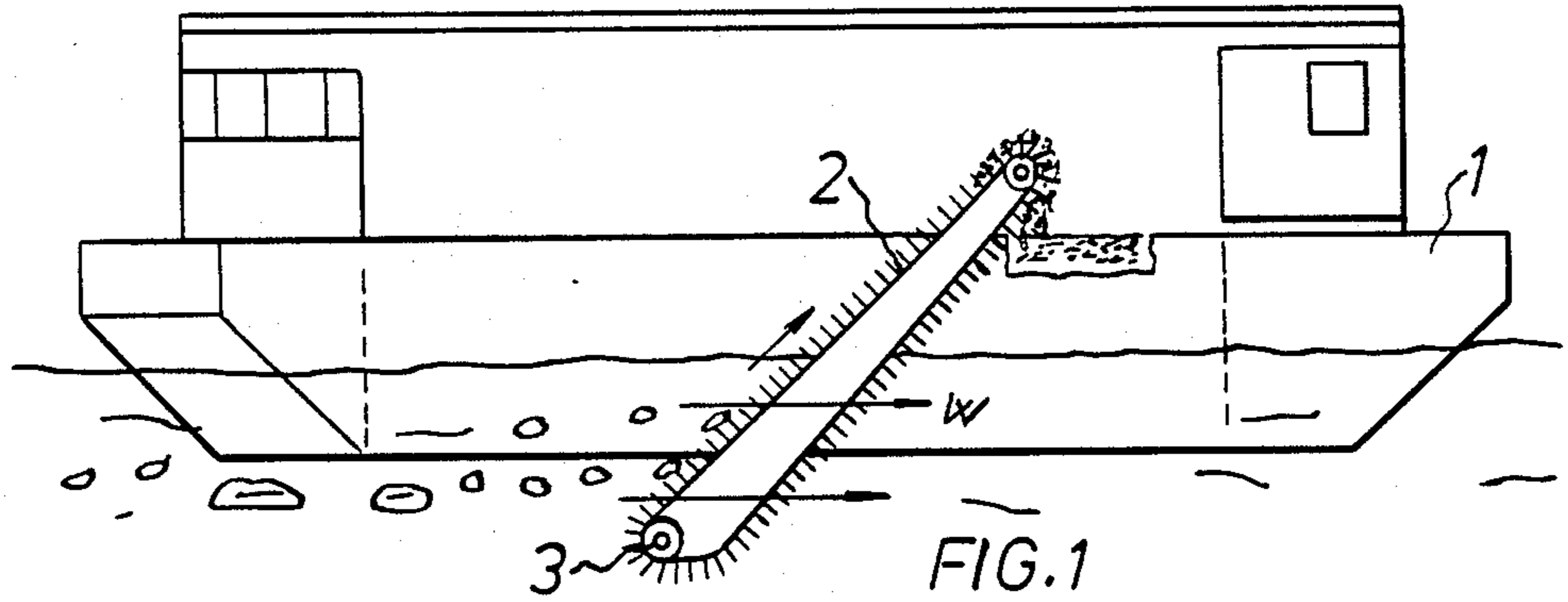
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2 Claims, 1 Drawing Sheet





DEVICE FOR PICKING UP OIL FROM WATER AND FROM THE SURFACE OF WATER

This application is a continuation of application Ser 5
No. 617,379, filed June 5, 1984, now abandoned.

BACKGROUND OF THE INVENTION

1. 1. Field of the Invention The present invention 10
relates to a device for picking up oil from water and
from the surface of water, preferably of the type which
is adapted to be installed in a water craft and comprises
at least one oblong collecting means passing over rolls
or rollers, the collecting means having been fitted 15
obliquely downwards and forwards in relation to the
water craft travel direction, means having been ar-
ranged at the upper end of the collecting means for
removing the oil collected by it and for directing the oil
into a tank in the craft.

2. Description of the Prior Art It is previously known 20
to use rotatable mats extending obliquely to the water
for collecting and removing oil which is on the surface
of water. There are known mats which are provided
with transverse strips of wood or similar means for 25
picking up oil, as well as with threads or other similar
oil-absorbing means attached to the uninterrupted mat
surface (e.g. U.S. Pat. No. 3,617,555). It has been shown
that, especially when the oil is deeper in the water, the
efficiency of these known devices is very low. Even at 30
very low speeds of the craft, even at one knot, the mat
easily directs the water, and along with it also the oil, to
the sides so that the quantity of oil obtained in the mat
remains rather small. From, for example, U.S. Pat. No.
226,662 it is also known to use plastic belts having a 35
circular cross section and running in parallel, but it is
evident that the oil-collecting capacity of such belts is
very low.

SUMMARY OF THE INVENTION

The object of the present invention is to eliminate 40
those problems involved in the previously known de-
vices by simple means and to provide an oil-collecting
device which is capable of efficiently collecting and
picking up oil from the surface of water, as well as from 45
deeper down. In order to achieve this object the collect-
ing means is made up of a loop made from a chain or the
like, to which there are fixed successive pieces provided
with bristles, the bristles extending, as seen in the longi-
tudinal direction of the chain, upwards and to both sides. 50
The device comprises several such collecting means
arranged in parallel, the rolls at each end of the means
being mounted on a common shaft and the mutual dis-
tances between the means having been selected so that
the bristles of adjacent collecting means, extending 55
sideways, substantially extend as far as to contact each
other but allow the flow of water between the collect-
ing means. The essential characteristic of the invention
is thus that the device has been arranged so as to be
highly permeable to water, so that when the water craft 60
travels forwards, water can substantially without obsta-
cle flow between the collecting means, the oil adhering
to the bristles of the collecting means at the same time as
the water passes between them. Advantageously, indi-
vidual bristled pieces can, by using ordinary chains 65
available commercially, be fastened to the chain, for
example by means of bolts passing through sleeves
transverse to the chain.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic representation of a water craft 5
equipped with an oil-collecting device according to the
invention,

FIG. 2 is a schematic representation of an end view of
a mat according to the invention, FIG. 3 depicts a side
view, in part in section, of the chain and the bristled
pieces attached to it, and FIG. 4 depicts an end view of
a bristled piece. 10

DESCRIPTION OF THE PREFERRED
EMBODIMENT FIG. 1 shows how an arrangement 2,
described below in greater detail, running around rolls 15

3, is fitted to the water craft 1 in such a way that it
extends obliquely down to the water. The craft travels
slowly, from right to left in the figure, the flow of water
being indicated by arrows W. The rotating arrangement
picks up oil from the surface of water, as well as from
deeper down, and at the top end of the arrangement 20
there are provided in a known manner oil-removal
means, not shown here, which direct the oil collected
from the mat into a tank in the craft. The oil-removal
means can be, for example, of the type described in EP
application No. 84302187.4. 25

The straight part of the arrangement can be, for ex-
ample, 5-10 meters long, in which case it may also
extend several meters into the water. The essential idea
of the invention is that water can flow well through the
arrangement, in which case also its oil-collecting effi-
ciency is excellent. 30

FIG. 2 depicts schematically an end view of the ar-
rangement. It is made up of loop-like collecting means 7
arranged in parallel, only their upper part being shown
in the figure. Each collecting means for its part is made
up of individual bristled pieces 4, which have been
attached successively by means of longitudinal chains to
form a row, the chains passing around wheels 3 at the
ends of the arrangement. As shown in the figure, the
space in the lateral direction between the bristle-sup-
porting members 4 is greater than the width of the body
of the pieces, and the bristles 8 on adjacent pieces 4
extend in the lateral direction so as to come into contact
with each other. When the craft and the arrangement 40
move, oil adheres to the bristles 8 on the pieces 4, but
water can easily flow between the bristles, in which
case the oil to be collected is not directed to the sides.
The interval between the rows can be, for example, 25
cm and the height of a bristled piece 4, including its
bristles, in the order of 15 cm. 50

FIGS. 3 and 4 show schematically the attachment of
an individual bristled piece to the chain. The bristled
piece 4 is preferably made of strong plastic, as are the
bristles fixed to it. As is shown in FIG. 4, the cross
section of the bristled piece 4 has substantially the shape
of an upside-down U, the steel chain 5 having been
fitted to pass between the branches of the U. The chain
can be of any type available commercially, most prefer-
ably one in which the articulation pins are in the form of
sleeves, in which case the bristled piece 4 can be se-
cured to the chain by means of a bolt 6 or a pin, passing
through the articulation sleeve. 55

It is evident that the device can be implemented in
several different ways within the scope of the invention
and in manners deviating from that shown in the draw-
ing, as long as care is taken that water can flow easily
between the bristled pieces which form the collecting
surface. The dimensions mentioned above are also in- 65

tended only to illustrate the example, and the device is, of course, in practice dimensioned according to its application.

What is claimed is:

1. A device for picking up oil from water and from the surface of water adapted to be installed on a water craft, said device comprising:

a plurality of oblong loop shaped collecting members having ends, arranged in parallel and obliquely downwards, with one end of each member in the water and the other end of each member at a higher position above the water level, said collecting members being spaced apart in a direction transverse to the direction of water movement past the water craft;

two common axes extending transversely at the lower and upper end of the collecting members, respectively;

roller means, provided on said axes to facilitate the loop shaped collecting members to run there-around;

each of said loop shaped collecting members comprising a chain loop of successive chain links and a plurality of collecting means attached to the chain

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links, each of said collecting means comprising a body provided with bristles and being fixed on said chain links in a successive manner to form a successive line of bristles thereon, said bristles extending upwardly and to both sides of said chain loop, the lateral spacing between adjacent bodies on adjacent collecting members, not including the bristles, being at least equal to the width of the bodies carrying said bristles, and the bristles on the bodies of adjacent collecting members extending into contact with each other over said lateral spacing; and

means provided at the upper end of said collecting members for removing oil from said collecting members and for conducting said oil into a collecting tank.

2. A device according to claim 1, wherein said body has a cross-section having substantially the shape of an upside-down U having branches, said chain loop being disposed to pass between the branches of the U and being secured thereto by means of bolts passing through said chain loop.

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